

CLAIMS

What is claimed is:

1 1. In combination with a transport mechanism that includes a plurality
2 of conveyor rollers, an apparatus for positioning a carriage at a desired position on the
3 transport mechanism, the carriage being loadable with a wound reel, the apparatus
4 comprising:

5 a rotary pulse generator (16) associated with one of the plural conveyor
6 rollers (9) for registering the revolutions of the one of the plural conveyor rollers (9)
7 wherein the revolutions embody a measure of the distance traveled on the transport
8 mechanism (1) by the carriage (6);

9 at least a first and a second initiator (13, 17) for determining the current
10 position of the carriage (6) on the transport mechanism (1), the first initiator (13) for
11 detecting a first position of the carriage (6), the second initiator (17) for detecting a
12 second position of the carriage (6) wherein the revolutions of the rotary pulse generator
13 (16) and a distance between the first and second initiator are used to calculate a slip
14 (K), the slip (K) being used to determine distance (W) between the current position of
15 the carriage (6) and the desired position (S) of the carriage (6).

1 2. The apparatus of claim 1, wherein the first and the second initiators
2 (13, 17) are separated by a predetermined distance (18).

1 3. The apparatus of claim 2, wherein
2 the first initiator (13) is arranged at an inlet of the transport mechanism (1);

the second initiator (17) is arranged distal from the first initiator (13) by the predetermined distance; the carriage (6) traveling at least from the first to the second initiator (13, 17);

the rotary pulse generator (16) registers the revolutions of the conveyor rollers (9) in pulses wherein a first number of pulses registered (X) is associated with the carriage (6) at the second initiator (17), a second number of pulses (Y) is associated with the predetermined distance (18) between the first and the second initiator (13, 17), and a third number of pulses (I) is associated with the desired position (S) of the carriage;

the apparatus further comprising

a computer (15) associated with the rotary pulse generator (16) and the at least first and second initiators (13, 17), the computer (15) for storing and evaluating the plural number of pulses (X, Y, I) to calculate a slip (K) to determine the distance (W) between the current position of the carriage (6) and the desired position (S) of the carriage (6).

4. The apparatus of claim 3, further comprising a counter (14) associated with the computer (15), the counter (14) for storing the first number of pulses registered (X) associated with the carriage at the second initiator (17).

5. The apparatus of claim 4, wherein the counter (14) is set to zero when the first initiator (13) senses the carriage (6).

1 6. The apparatus of claim 4, wherein the counter (14) is reset when
2 the second initiator (17) senses the carriage (6).

1 7. The apparatus of claim 4, wherein the counter (14) becomes usable
2 for determining a new value of the slip (K) when the second initiator (17) senses the
3 carriage (6).

1 8. The apparatus of claim 4, wherein the rotary pulse generator (16)
2 and the at least first and second initiators (13, 17) are associated with the counter (14).

1 9. The apparatus of claim 2, wherein the predetermined distance (18)
2 is a fixed value.

1 10. The apparatus of claim 1, wherein the carriage (6) is moved on to
2 the transport mechanism (1) by the plural conveyor rollers (9).

1 11. In combination with a transport mechanism that includes a plurality
2 of conveyor rollers, an apparatus for determining the distance between the present
3 location of a carriage of known dimensions and the desired position of the carriage on
4 the transport mechanism, the carriage being loadable with a wound reel, the apparatus
5 comprising:

6 at least a first and a second initiator (13, 17) for determining the current
7 position of the carriage (6) on the transport mechanism (1), the first initiator (13) for
8 detecting a first position of the carriage (6), the second initiator (17) for detecting a
9 second position of the carriage (6),

10 a rotary pulse generator (16) associated with one of the plural conveyor
11 rollers (9), the rotary pulse generator (16) for registering the revolutions of the one of the
12 plural conveyor rollers (9) wherein the revolutions embody a measure of the distance
13 traveled on the transport mechanism (1) by the carriage (6) from the first to the second
14 initiator; and

15 a computer (15) associated with the rotary pulse generator (16) and the at
16 least first and second initiators (13, 17), the computer (15) evaluating the revolutions of
17 the rotary pulse generator (16) and a distance between the first and second initiator to
18 calculate a slip (K) to determine the distance (W) between the current position of the
19 carriage (6) and the desired position (S) of the carriage (6).

1 12. The apparatus of claim 11, wherein the first and the second
2 initiators (13, 17) are separated by a predetermined distance (18).

1 13. The apparatus of claim 12, wherein
2 the first initiator (13) is arranged at an inlet of the transport mechanism (1);
3 the second initiator (17) is arranged distal from the first initiator (13) by the
4 predetermined distance; the carriage traveling at least from the first to the second
5 initiator (13, 17);

6 the rotary pulse generator (16) registers the revolutions of the conveyor
7 rollers (9) in pulses wherein a first number of pulses registered (X) is associated with
8 the carriage at the second initiator (17), a second number of pulses (Y) is associated
9 with the predetermined distance (18) between the first and the second initiator (13, 17),

10 and a third number of pulses (I) is associated with the desired position (S) of the
11 carriage;

12 the apparatus further comprising

13 a computer (15) associated with the rotary pulse generator (16) and the at
14 least first and second initiators (13, 17), the computer (15) for storing and evaluating the
15 plural number of pulses (X, Y, I) to calculate a slip (K) to determine the distance (W)
16 between the current position of the carriage (6) and the desired position (S) of the
17 carriage (6).

1 14. The apparatus of claim 13, further comprising a counter (14)
2 associated with the computer (15), the counter (14) for storing the first number of pulses
3 registered (X) is associated with the carriage at the second initiator (17).

1 15. The apparatus of claim 14, wherein the counter (14) is set to zero
2 when the first initiator (13) senses the carriage (6).

1 16. The apparatus of claim 14, wherein the counter (14) is reset when
2 the second initiator (17) senses the carriage (6).

1 17. The apparatus of claim 14, wherein the counter (14) becomes
2 usable for determining a new value of the slip (K) when the second initiator (17) senses
3 the carriage (6).

1 18. The apparatus of claim 14, wherein the rotary pulse generator (16)
2 and the at least first and second initiators (13, 17) are associated with the counter (14).

1 19. The apparatus of claim 12, wherein the predetermined distance is a
2 fixed value.

1 20. The apparatus of claim 11, wherein the carriage (6) is moved on to
2 the transport mechanism (1) by the plural conveyor rollers (9).

1 21. A method of determining the distance between the present location
2 of a carriage of known dimensions and the desired position of the carriage on a
3 transport mechanism using an apparatus in combination with the transport mechanism;
4 wherein

5 the transport mechanism comprises a plurality of conveyor rollers, and
6 the apparatus comprises at least a first and a second initiator for
7 determining a respective first and second instance of the carriage on the transport
8 mechanism and a rotary pulse generator associated with one of the plural conveyor
9 rollers;

10 the method comprising the steps of:

- 11 (a) registering a first instance of the carriage;
12 (b) registering a second instance of the carriage;
13 (c) determining the distance traveled by the carriage between the first and
14 second instance;
15 (d) determining the revolutions of one of the plural conveyor rollers
16 wherein the revolutions embody a measure of the distance traveled on the transport
17 mechanism by the carriage from the first to the second instance; and

18 (e) evaluating the revolutions and a distance between the first and second
19 instance to calculate a slip (K) to determine distance (W) between the current position of
20 the carriage and the desired position (S) of the carriage.